

REMARKS

With this Amendment claims 25, 26, 29, 30 and 32-51 are pending in the present application. Claims 24, 28 and 31 have been cancelled herein without prejudice to prosecuting these claims in continuing applications. Claims 25, 26, 32-35 and 37 have been amended in an editorial manner. For example, claim 33 has been amended to include to the word "signal." Applicant respectfully submits that no new matter has been added by this Amendment.

Formal RejectionsClaims Rejected Under 35 U.S.C. § 112, First Paragraph

The §112 rejection with respect to claim 25's recitation of "combined data" is respectfully traversed. The term "combined data" is disclosed and thoroughly explored throughout the specification, e.g., at page 6, lines 10-12, page 8, lines 7-9, etc, etc. And applicant contemplated compressing combined data in, e.g., claim 25 as originally filed (see original claim 25, line 6 "(b) compressing the combined data; and"). Certainly, one of ordinary skill in the art would be enabled to make or use the invention as recited in claim 25 in view of our detailed specification.

A similar position applies to claim 36. The features of claim 36 find ample support in the specification, e.g., for a data signal including the auxiliary information embedded therein during a compressing step. Accordingly, applicant traverses the §112 rejection with respect to claim 36.

With respect to claim 40, support for embedding retrieved auxiliary information is found throughout the specification including, e.g., Fig. 10A, page 32, lines 10-21 and

page 5, lines 5-8.

Withdrawal of the above-noted rejections is respectfully requested.

Claims Rejected Under 35 U.S.C. § 112, Second Paragraph

Applicant appreciates the Examiner's review of the claims. Some minor editorial changes have been made to claims 25, 26 and 32, which should remove the outstanding 35 U.S.C. § 112 rejections.

Withdrawal of the rejections is respectfully requested.

Art Based Rejections

Applicant respectfully traverses the rejection of the pending claims as being anticipated by or unpatentable over Hartung variously in view of Nakano (U.S. Patent No. 6,298,142) and Patterson (U.S. Patent No. 6,018,369), as set forth in the Office Action.

Claims 24, 28 and 31

Applicant respectfully traverses the rejection of claims 24, 28 and 31 as being anticipated by Hartung ("Digital Watermarking of Raw and Compressed Video").

Hartung fails to teach or suggest at least bypassing removal of embedded data during digital bit-rate reduction. The Office Action cites Hartung's conclusion as "using" separate data embedding techniques. But we read the conclusion¹ as supporting a notion that a watermark is embedded either into the uncoded video or into an MPEG-2

¹ "The scheme is interoperable and fully compatible with a scheme working in the pixel domain of uncompressed video which was also presented." See Hartung, at 7. Conclusions.

bitstream, and can be retrieved from the decode video. (See Hartung, Abstract, lines 3-4.).

Nevertheless, claims 24, 28 and 31 have been cancelled herein without prejudice. Hence, the outstanding rejection with respect to these claims is rendered moot.

Claim 25

Claim 25 relates to a method of embedding auxiliary information in data in which the auxiliary information is not lost with compression of the data. The data initially includes a non-compressed form including the auxiliary information embedded therein. The non-compressed form plus the auxiliary information can be referred to as combined data. The method includes the steps of: retrieving the auxiliary information from the combined data; *compressing the combined data*; and *embedding* the auxiliary information in the compressed combined data. The compressed combined data includes the auxiliary information embedded therein.

Hartung does not teach or suggest such an inventive combination. While Hartung may suggest different techniques for watermarking raw video and compressed video, Hartung does not contemplate embedding auxiliary information in data so that the auxiliary information is not lost with compression of the data in the manner contemplated by claim 25.

The Office Action disregards the inter-relationship of the data in claim 25, e.g., retrieving auxiliary information from the data while in a combined form, then compressing the combined data (e.g., non-compressed plus embedded information), and then embedding the auxiliary information in the compressed combined data.

Hartung does not envision such a combination of features.

And the fact that Nakano mentions that compression results in a loss of watermark data does not remedy Hartung's deficiencies. (The Office does not rely on Nakano to teach the method features or the relationship of the features that Hartung lacks.).

Accordingly, claim 25 should be allowed.

Claim 33

Claim 33 recites a distinct combination of features. Analyzing claim 33 as if it recited the exact same features as claim 25 is considered improper, since it ignores the actual combination of features recited in claim 33.

Moreover, claim 33 recites a combination of features that is not taught or suggested by Hartung and Nakano.

Claim 33 recites a method including retrieving auxiliary information from a data signal. The auxiliary information is encoded in the data signal. The auxiliary information is retrieved from the data signal while the data signal includes a non-compressed form; compressing the data signal, and the retrieved auxiliary information is embedded in the compressed data signal. The compressed data signal comprises the retrieved auxiliary information

Hartung discusses techniques for watermarking raw video and compressed video, but *Hartung does not contemplate the inter-relationship of the data in claim 33*, e.g., where auxiliary information is retrieved from a data signal, the data signal is then compressed, and then the retrieved auxiliary information is embedded into the compressed data signal.

Nakano is deficient with regard to the features (as well as the inter-relationship of the features) disclosed in claim 33.

Thus, claim 33 should be allowed.

Claim 40

Hartung and Nakano also fail to teach or suggest the features recited in claim 40. For example, the proposed combination of references fail to disclose retrieving auxiliary information from an original data signal, wherein the auxiliary information is encoded in the original data signal; *performing a transformation on the original data signal to create a transformed data signal; and embedding the retrieved auxiliary information in the transformed data signal*, wherein the transformed data comprises the retrieved auxiliary information.

Claim 40 should be similarly allowed.

Claim 26

Claim 26 stands rejected as being unpatentable over Hartung in view of Patterson. Applicant respectfully disagrees.

The Office Action recognizes that Hartung fails to teach or suggest retrieving auxiliary information from a compressed form, decompressing the compressed form to yield a non-compressed form, and embedding the auxiliary information in the non-compressed form (see Office Action, page 9, paragraph 5).

Patterson is cited for this combination.

Yet the cited passages of Patterson are not understood to show embedding auxiliary information in the non-compressed form, and certainly not showing steganographically embedding the auxiliary information in the non-compressed form, in combination with the features of claim 26.

Applicant also questions the propriety of combining Hartung and Patterson in a manner suggested by the Office Action. Patterson deals with closed captioning, not steganography or watermarking. There is no motivation to combine the references as suggested with respect to amended claim 26.

Hence, claim 26 should be allowed.

Claim 37

Amended claim 37 recites a method including: retrieving auxiliary information from a data signal, wherein the auxiliary information is encoded in the data signal, and wherein the auxiliary information is retrieved from the data signal while the data signal comprises a compressed form; decompressing the compressed data signal to yield a de-compressed data signal; and embedding the retrieved auxiliary information in the de-compressed data signal, *wherein the de-compressed data signal comprises digital data*, whereby the de-compressed data signal comprises the auxiliary information embedded therein.

Patterson's teachings suggest a digital-to-analog conversion, not embedding the retrieved auxiliary information in the de-compressed data signal, *wherein the de-compressed data signal comprises digital data*, and whereby the de-compressed data signal comprises the auxiliary information embedded therein, in combination with the other features of claim 37.

Combining Hartung with Patterson is considered improper, but still would not remedy Patterson's deficiencies even if so combined.

Hence, claim 37 should be allowed.

Dependent Claims

The dependent claims recite many additional patentable features when taken in combination with their respective base claims.

For example, claims 37 and 38 respectively recite that the retrieved auxiliary information is steganographically encoded in the de-compressed data signal, and that the retrieved auxiliary information is encoded in the de-compressed data signal in the form of a steganographic watermark. Combining Patterson with Hartung is incongruent for these claims for similar reasons as those presented above with respect to claim 26.

Favorable and independent consideration is requested for each of the dependent claims.

New Claim 51

New claim 51 is loosely patterned after claim 26. Note in this regard that a combination of Patterson and Hartung would not teach at least embedding the auxiliary information in the non-compressed form, wherein the non-compressed form of the data comprises the auxiliary information embedded therein, and wherein the non-compressed form including the auxiliary information embedded therein comprises digital data, in combination with the features of claim 51.

Favorable consideration is requested.

Request for Personal Interview

Applicant requests an in-person interview to discuss the amended and newly presented claims in view of the cited art. Should the Examiner pick up this Amendment prior to the scheduling of an interview, the Examiner is requested to contact the undersigned at the phone number given below.

Conclusion

Early passage to issuance is respectfully requested in view of the above amendments and remarks. (Other deficiencies of the proposed combination of references are not belabored herein. Applicant also questions the propriety of combining the references as suggested in the office action, along with the motivation for doing so.).

The Examiner is invited to telephone the undersigned at 503-495-4575 if any issue remains.

Date: February 26, 2003

Respectfully submitted,



23735

PATENT TRADEMARK OFFICE

Phone: 503-885-9699

DIGIMARC CORPORATION

FAX: 503-885-9880

By _____



Steven W. Stewart
Registration No. 45,133

Enclosure: Marked-up and Pending Claims

Marked-up and Pending Claims

24. (Cancelled)

25. (Amended) A method of embedding auxiliary information in data, wherein [The method of claim 24 in which] the auxiliary information is not lost with [during the] compression of the data, the data initially comprising a non-compressed form including the auxiliary information embedded therein, and wherein combined data comprises the non-compressed form including the auxiliary information, said method comprising: [by:]

- (a) retrieving the auxiliary information from the combined [non-compressed] data;
- (b) compressing the combined data; and
- (c) embedding [re-embedding] the auxiliary information in the compressed combined data, whereby the compressed combined data comprises the auxiliary information embedded therein.

26. (Amended) A method of embedding auxiliary information in data, wherein [The method of claim 24 in which] the auxiliary information is not lost with [during the] decompression of the data from a compressed form to a non-compressed form, and wherein the compressed form includes the auxiliary information, said method comprising: [by:]

- (a) retrieving the auxiliary information from the compressed form; [data;]
- (b) decompressing the compressed form to yield the non-compressed form; [information;] and
- (c) steganographically embedding the auxiliary information in the non-compressed form [data,] whereby the non-compressed form of the data comprises the auxiliary information embedded therein.

28. (Cancelled)

29. (Unchanged) The method of claim 25 wherein the compression comprises encoding.

30. (Unchanged) The method of claim 26 wherein the decompression comprises decoding.

31. (Cancelled)

32. (Amended) The method of claim 26 [28] wherein the decompressing [decompression] comprises decoding.

33. (Amended) A method comprising:
 retrieving auxiliary information from a data signal, wherein the auxiliary information is encoded in the data signal, and wherein the auxiliary information is retrieved from the data signal while the data signal comprises a non-compressed form;
 compressing the data signal; and
 embedding the retrieved auxiliary information in the compressed data signal,
wherein the compressed data signal comprises the retrieved auxiliary information.

34. (Amended) The method of claim 33, wherein the retrieved auxiliary information is steganographically retrieved from the non-compressed [compressed] data signal.

35. (Amended) The method of claim 34, wherein the retrieved auxiliary information is embedded [encoded] in the compressed data signal in the form of a steganographic watermark.

36. (Unchanged) The method of claim 33 wherein the data signal includes the auxiliary information embedded therein during said compressing step.

37. (Amended) A method comprising:
retrieving auxiliary information from a data signal, wherein the auxiliary information is encoded in the data signal, and wherein the auxiliary information is retrieved from the data signal while the data signal comprises a compressed form;
decompressing the compressed data signal to yield a de-compressed data signal;
and

embedding the retrieved auxiliary information in the de-compressed data signal,
wherein the decompressed data signal comprises digital data, whereby the de-compressed data signal comprises the auxiliary information embedded therein.

38. (Unchanged) The method of claim 37, wherein the retrieved auxiliary information is steganographically encoded in the de-compressed data signal.

39. (Unchanged) The method of claim 37, wherein the retrieved auxiliary information is encoded in the de-compressed data signal in the form of a steganographic watermark.

40. (Unchanged) A method comprising:
retrieving auxiliary information from an original data signal, wherein the auxiliary information is encoded in the original data signal;
performing a transformation on the original data signal to create a transformed data signal; and
embedding the retrieved auxiliary information in the transformed data signal,
wherein the transformed data comprises the retrieved auxiliary information.

41. (Unchanged) The method of claim 40 wherein the auxiliary information is steganographically retrieved from the original data signal.

42. (Unchanged) The method of claim 41 wherein the auxiliary information is steganographically encoded in the transformed data signal.

43. (Unchanged) The method of claim 40 wherein the auxiliary information is steganographically encoded in the transformed data signal.

44. (Unchanged) The method of claim 40 wherein the transformation causes the auxiliary information not to be detectable from the transformed data signal.

45. (Unchanged) The method of claim 44 wherein the auxiliary information is steganographically retrieved from the original data signal.

46. (Unchanged) The method of claim 45 wherein the auxiliary information is steganographically encoded in the transformed data signal.

47. (Unchanged) The method of claim 44 wherein the auxiliary information is steganographically encoded in the transformed data signal.

48. (Unchanged) The method of claim 40 wherein the embedding of the retrieved auxiliary information in the transformed data signal uses a robust embedding method for the transformed data signal that enables detection of the auxiliary information by a detector.

49. (Unchanged) The method of claim 48 wherein the auxiliary information is steganographically encoded in the transformed data signal.

50. (Unchanged) The method of claim 49 wherein the auxiliary information is steganographically retrieved from the original data signal.

51. (New) A method of embedding auxiliary information in data in which the auxiliary information is not lost with decompression of the data from a compressed form to a non-compressed form, wherein the compressed form includes the auxiliary information, said method comprising:

- (a) retrieving the auxiliary information from the compressed form;
- (b) decompressing the compressed form to yield the non-compressed form;
and
- (c) embedding the auxiliary information in the non-compressed form, wherein the non-compressed form of the data comprises the auxiliary information embedded therein, and wherein the non-compressed form including the auxiliary information embedded therein comprises digital data.